

AP20 Rec'd PCT/PTO 27 JUL 2006  
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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A process for the separation of cobalt and/or manganese from impurity elements selected from one or more of calcium and magnesium contained in a leach solution, or for separating cobalt from manganese contained in a leach solution, the process comprising the step of subjecting the leach solution to solvent extraction using an organic solution of a carboxylic acid and an aliphatic hydroxyoxime.
2. The process of claim 1, wherein cobalt poisoning as a result of oxidation of cobalt(II) to cobalt(III) is avoided.
3. The process of claim 1 or claim 2, wherein the solvent extraction of the leach solution with the organic solution produces an organic phase and an aqueous raffinate, and wherein all of the organic phase is subjected to stripping with an acid solution to strip cobalt from the organic phase.
4. The process of claim 3, wherein the stripping with the acid solution is preceded by scrubbing of the organic phase.
5. The process of claim 3 or claim 4, wherein the stripping with the acid solution is preceded by a selective stripping stage.
6. The process of any one of claims 1 to 5, wherein the organic solution displays fast extraction kinetics for copper, cobalt, zinc and manganese.
7. The process of any one of claims 1 to 6, wherein the organic solution is in contact with the leach solution for a period of 5 minutes or less.

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8. The process of claim 7, wherein the organic solution is in contact with the leach solution for a period of 3 minutes or less.

5 9. The process of claim 7, wherein the organic solution is in contact with the leach solution for a period of 2 minutes or less.

10 10. The process of any one of claims 1 to 8, wherein the organic solution comprises a stabilizer against hydroxyoxime degradation.

11. The process of claim 10, wherein the stabilizer reduces oxidation and/or hydrolysis of the hydroxyoxime.

15 12. The process of claim 10, wherein the stabilizer is an antioxidant.

20 13. The process of claim 10, wherein the stabilizer is an alkylphenol.

14. The process of any one of claims 1 to 13, wherein the leach solution contains little nickel.

25 15. The process of any one of claims 1 to 14, wherein the leach solution contains cobalt and/or manganese, together with impurity elements selected from one or more of calcium, magnesium, (manganese) and chloride, optionally together with copper and/or zinc.

30 16. The process of any one of claims 1 to 15 wherein, the leach solution contains the following levels of elements:

Ni: 0 - 100 ppm

35 Co: 100 ppm - 5 g/L

Cu: 0 - 100 ppm

Zn: 0.2 - 2 g/L

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Ca: 1ppm - saturated

Mn: 0.2 - 50 g/L

Mg: 1ppm - 100 g/L

5 17. The process of any one of claims 1 to 16, wherein the  
leach solution is a solution that has been subjected to a  
preliminary iron and/or aluminium precipitation step to  
precipitate out iron and/or aluminium to leave an aqueous  
leach solution containing the target elements and impurity  
10 elements.

18. The process of any one of claims 1 to 17, wherein the  
carboxylic acid is 2-methyl, 2-ethyl heptanoic acid or a  
cationic exchange extractant having extraction  
15 characteristics similar to 2-methyl, 2-ethyl heptanoic  
acid.

19. The process of any one of claims 1 to 18, wherein the  
hydroxyoxime is a chelating  $\alpha$ -hydroxyoxime.  
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20. The process of any one of claims 1 to 19, wherein the  
leach solution contains cobalt and manganese, and the pH  
of the aqueous phase in the solvent extraction step is  
maintained in the range of from 5.5 to 7.0 to effect  
25 extraction of the cobalt and manganese into the organic  
phase.

21. The process of claim 20, wherein the pH of the  
aqueous phase in the solvent extraction step is maintained  
30 in the range of from 5.8 to 6.3.

22. The process of claim 20 or claim 21, wherein the  
organic phase containing cobalt and manganese is subjected  
to selective stripping to separate to a significant extent  
35 the cobalt from the manganese.

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23. The process of claim 22, wherein the selective stripping comprises contacting the organic phase from the solvent extraction with an acidic aqueous solution to yield (a) a loaded strip liquor containing manganese and (b) a selectively stripped organic solution containing cobalt.

24. The process of claim 23, wherein the acidic aqueous solution used in the selective stripping has a pH in the range of 4.0 to 5.0.

25. The process of any one of claims 1 to 19, wherein the leach solution contains cobalt and manganese, and the pH of the aqueous phase in the solvent extraction step is maintained in the range of from 3.5 to 5.0 to effect extraction of cobalt into the organic phase and rejection of manganese to the aqueous phase.

26. The process of claim 23, wherein the cobalt is recovered from the organic phase by bulk stripping.

27. The process of any one of claims 1 to 26, wherein the leach solution comprises zinc and/or copper, the zinc and/or copper are extracted into the organic phase with the cobalt in the solvent extraction step, and the zinc and/or copper are separated from the cobalt by ion exchange.

28. The process of any one of claims 1 to 19, wherein the leach solution comprises manganese and a low level or no cobalt, and the manganese is extracted into the organic phase to effect separation of manganese from the impurity elements calcium and/or magnesium.

29. The process of any one of claims 1 to 28, wherein scrubbing is conducted on the organic phase after each solvent extraction.

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30. A process for the separation of zinc, copper and cobalt from impurity elements selected from one or more of manganese, calcium and magnesium contained in a leach solution, the process comprising the step of subjecting the leach solution to solvent extraction using an organic solution of a carboxylic acid and an aliphatic hydroxyoxime.
31. The process of claim 30, wherein cobalt poisoning as a result of oxidation of cobalt(II) to cobalt(III) is avoided.
32. The process of claim 30 or claim 31, wherein the solvent extraction of the leach solution with the organic solution produces an organic phase and an aqueous raffinate, and wherein all of the organic phase is subjected to stripping with an acid solution to strip cobalt from the organic solution.
33. The process of any one of claims 30 to 31, wherein the organic solution displays fast extraction kinetics for copper, cobalt, zinc and manganese.
34. A product recovered by the process according to any one of claims 1 to 33.